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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CLARK, GREGORY D	

ART UNIT	PAPER NUMBER
1794	

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11/25/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,005	VESTWEBER ET AL.	
	Examiner	Art Unit	
	GREGORY CLARK	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *2 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-22 and 24-27* is/are rejected.

7)☐ Claim(s) _ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The examiner acknowledges the receipt of the applicants' amendments dated 09/23/2009. Claims 1, 37, 10-11and 25 currently amended,; 4, 12-14, 16-2, 24 and 26-27 previously presented; 5,8-9, 21 and 22 original; 2 and 23 cancelled.

Rejections and objections made in previous office action that do not appear below have been overcome by applicant's amendments and therefore the arguments pertaining to these rejections/objections will not be addressed.

Claim Objections

Claim 24 is objected to because of the following informalities: The claim list a series of devices with no clear connection to any claim limitation. The claim should be re-written to include specific limitations. Appropriate correction is required.

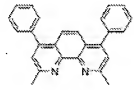
Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 1, 3, 5-18 and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tominaga (US 2003/0168970).**

2. **Regarding Claim 1,** Tominaga discloses an organic electroluminescent device containing an anode, cathode (abstract) and a matrix material (4, 4'-bis (carbazol-9-yl) biphenyl (CBP)) (paragraph 117) doped with a phosphorescent emitter (paragraph 47).

The device also has an electron transporting layer containing BCP (2, 9-dimethyl-4, 7-diphenyl-1, 10-phenanthroline=bathocuproin) (paragraph 116). Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17). The examiner notes the applicant mentions BCP as a suitable hole blocking material in the specification page 2. The structure of BCP is shown below:



BCP

BCP meets the criteria of Y=X where X is a nitrogen (N) which has a non-bonding electron pair and X stands for NR where R is a carbon atom (C). The matrix material is not the same as the hole blocking layer.

Formula (2)

BCP shows

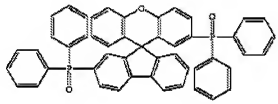
Y is C

X is NR4

R1 and R2 are different and are heteroaromatic rings

R4 is a heteroaromatic ring

3. **Regarding Claims 3**, Tominaga discloses an organic electroluminescent device where the matrix material can include the compound represented by formula 3 (page 15):



Formula 3 shows

Y= P

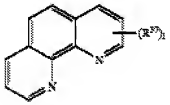
X =O.

4. **Regarding Claim 5 and 25-26**, Tominaga discloses an organic electroluminescent device with an electron transporting layer containing BCP (2, 9-dimethyl-4, 7-diphenyl-1, 10-phenanthroline=bathocuproin) (paragraph 116). Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17). The examiner takes the position that the hole blocking layer is only composed of BCP (per claim 26).

The BCP (above) (hole blocking material) shows X = N (has non-bonding electron pair) and R4 is represented by carbon atoms (per claim 25).

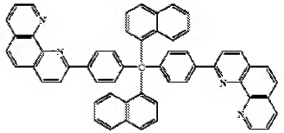
5. **Regarding Claims 6-8**, Tominaga discloses matrix materials (hole blocking materials, paragraphs 17 and 116) that includes BCP (shown above). The structure of BCP includes two sp3 hybridized carbon atoms (per claim 7) which are non-planar (per claim 6) and includes a sp3 hybridized carbon atom (per claim 7) that are secondary carbons (per claim 8) (paragraph 48).

6. **Regarding Claim 9**, Tominaga discloses that derivatives of the phenanthroline structure (i.e., BCP) have an electron transporting capacity (paragraph 22). Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17).



phenanthroline structure (paragraph 29)

Tominaga discloses formula 4 (page 20) shown below:



Formula 4 represents a hole blocking material that contains a sp3 hybridized quaternary carbon substitiuent.

7. **Regarding Claims 10 and 11,** Tominaga discloses an organic electroluminescent device that includes 9, 9'-spirobifluorene derivatives (paragraphs 61and 69).

8. **Regarding Claim 12,** Tominaga discloses an organic electroluminescent device (paragraph 1) that includes matrix materials selected from carbazoles or organometallic complexes (paragraph 47).

9. **Regarding Claim 13,** Tominaga discloses that the device can include the following layers: anode/hole transporting layer/emissive layer/electron transporting layer/cathode. Tominaga also discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17). The above structure shows the electron transporting layer (hole blocking layer) next to the cathode.

10. **Regarding Claims 14 and 15,** Tominaga discloses and organic electroluminescent device that contain phosphorescence emitters such as tris(2-phenylpyridyl) iridium (atomic number 77) (paragraph 47). The examiner notes that in the applicants' specification on page 10 that iridium is listed as a preferred metal.

11. **Regarding Claim 16,** Tominaga discloses and organic electroluminescent device that contain phosphorescence emitters such as tris (2-phenylpyridyl) iridium (paragraph 47).

12. **Regarding Claim 17,** Tominaga discloses that the electron transporting layer functions as a hole blocking layer which can efficiently inhibit the transport of holes (paragraph 17) and has a glass transition temperature of at least 120 deg C. The applicant claims a glass transition temperature of greater than 100 deg C.

13. **Regarding Claim 18,** Tominaga discloses that the organic layers are made from sublimable compounds (paragraph 118).

14. **Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by Yuan (US 2002/0066904).**

15. **Regarding Claim 24**, Yuan discloses devices that include organic laser diodes (paragraph 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. **Claims 4, 19-22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tominaga (US 2003/0168970).**

17. **Regarding Claims 19-22,** Tominaga discloses that the organic layers can be formed by evaporation by resistance heating, electron beam evaporation, sputtering, molecular deposition, coating and the like. Tominaga fails to mention the exact coating methods claimed by the applicant.

Tominaga teaches the device claimed by the applicant with respect to the chemical limitations. The limitations with respect to the coating method is viewed as a process limitation.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." (In re Thorpe, 227 USPQ 964,966). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evident establishing an unobvious difference

between the claimed product and the prior art product (in re Marosi, 710 F.2nd, 802, 218 USPQ 289, 292 (Fed. Cir. 1983, MPEP 2113).

18. **Regarding Claim 4,** Tominaga discloses an organic electroluminescent device containing a hole blocking layer made of BCP (2, 9-dimethyl-4, 7-diphenyl-1, 10-phenanthroline=bathocuproin) (paragraphs 16 and 117). Tominaga fails to mention the percentage of BCP in the hole blocking layer. The applicant claims a concentration of at least 50%.

The examiner takes the position that hole blocking layers are known in the art to confine the holes to the emissive region of the device to improve the emission efficiency.

With a reasonable expectation of successful a person of ordinary skill in the art would have applied the BCP in the device at varying levels to optimize the blocking of holes which would have included the range claimed by the applicant, absent unexpected results.

19. **Regarding Claim 27,** Tominaga discloses an organic electroluminescent device that is a thin film organic multi-layered device. The examiner takes the position that a thin film organic multi-layered device is inclusive of the electronic devices mentioned in claim 27.

Response to Arguments

The applicant has perfected the foreign priority with the submission of a certified translation of the priority document that contains the subject matter of the invention. As a result all rejections relative to Stoesel in the previous office action have been withdrawn. A new set of rejections is now presented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

GREGORY CLARK/GDC/
Examiner
Art Unit 1794